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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,582	08/20/2003	D. Navin Chandra	GEN-001	5207
51414 7590 05/10/2007 GOODWIN PROCTER LLP PATENT ADMINISTRATOR EXCHANGE PLACE BOSTON, MA 02109-2881			EXAMINER PHAM, KHANH B	
			ART UNIT 2166	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/644,582	<b>Applicant(s)</b> CHANDRA ET AL.	
	<b>Examiner</b> Khanh B. Pham	<b>Art Unit</b> 2166	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 26-40 and 92-106 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-40 and 92-106 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |  |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                        |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/28/07</u> . | 6) <input type="checkbox"/> Other: _____.  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 28, 2007 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 26 recites the limitation "the instantiated case frames" in line 11. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. **Claims 26-39 92-95, 97-106 are rejected** under 35 U.S.C. 102(e) as being anticipated by Kim et al. (US2002/0087275 A1), hereinafter “Kim”.

**As per claim 26**, Kim teaches a computer system for storing life science information comprising:

- “an electronic database storage module for storing data in the form of case frames, each case frame comprising: at least two unspecified object identifiers; and a relationship connector, wherein the relationship connector relates two of the at least two object identifiers to each other and is based on a life science ontology” at [0046]-[0047], [0055] and Fig. 1;
- “an inference engine module for managing the addition of new data to the database by translating the data into a form compatible with the database” at [0041], [0073]-[0074];

- “selecting a case frame as a template to represent the new data based at least in part on the life science ontology” at [0073] and Tables 1-3;
- “and for assigning elements of the new data to the object identifier, thus assuring the instantiated case frames conform to the life science ontology and, creating new life science assertions in the database” at [0081]-[0087].

**As per claim 27**, Kim teaches the system of claim 26, wherein “a set of said case frames define a biological function” at [0112].

**As per claim 28**, Kim teaches the system of claim 27, wherein “the biological function comprises a chemical reaction” at [0124].

**As per claim 29**, Kim teaches the system of claim 27, wherein “the biological function comprises transport” at [0124].

**As per claim 30**, Kim teaches the system of claim 27, wherein “the biological function comprises digestion of a biomolecule” at [0124].

**As per claim 31**, Kim teaches the system of claim 26, wherein “at least one of the at least two object identifiers identifies a biomolecule” at [0070].

**As per claim 32**, Kim teaches the system of claim 26, wherein “at least one of the at least two object identifiers identifies a biological function” at [0124].

**As per claim 33**, Kim teaches the system of claim 26, wherein “at least one of the at least two object identifiers identifies a relationship connector” at [0089]-[0091].

**As per claim 34**, Kim teaches the system of claim 26, wherein “the relationship connector represents an identity relationship” at [0091].

**As per claim 35**, Kim teaches the system of claim 26, wherein “the relationship connector represents a product relationship” at [0091].

**As per claim 36**, Kim teaches the system of claim 26, wherein “the relationship connector represents a substrate relationship” at [0103].

**As per claim 37**, Kim teaches the system of claim 26, wherein “the relationship connector represents an enzymatic relationship” at [0107].

**As per claim 38**, Kim teaches the system of claim 26 further comprising “a graphical user interface configured to permit a user to query the database based on the relationship connector” at Fig. 7.

**As per claim 39**, Kim teaches the system of claim 26 further comprising “a data input interface configured to accept user instructions relating to the creation of a new case frame” at Fig. 7.

**As per claim 92**, Kim teaches the system of claim 26, wherein “the inference engine further modifies the selected case frames such that the selected case frames more accurately represent the new data” at [0081]-[0087] and [0113]-[0120].

**As per claim 93**, Kim teaches the system of claim 92, wherein “the modifications comprise one or more of the addition of new fields, the addition of new relationships, and the addition of metadata” at [0074]-[0077].

**As per claim 94**, Kim teaches the system of claim 93, wherein “the metadata comprises one or more of the source of the new data, the data the new data was received, the time the new data was received, and the experimental conditions under which the new data was created” at [0077].

**As per claim 95**, Kim teaches the system of claim 26, further comprising: “a harmonization and transfer module for interfacing with multiple disparate sources of life science data and receiving the new data” at [0346] and Figs. 6, 13.

**As per claim 97**, Kim teaches the system of claim 95, wherein “the harmonization and transfer module further translates the received data into a data format compatible with the case frames” at Fig. 13.

**As per claim 98**, Kim teaches the system of claim 26, further comprising “a discovery environment for displaying a pathways among the plurality of case frames, the pathways representing causal relationship among the case frames” at Figs. 2-5.

**As per claim 101**, Kim teaches a system for storing life science data comprising:

- “an electronic database for storing a plurality of case frames, each case frame comprising at least two object identifiers; and a relationship connector, wherein

the relationship connector relates two of the at least two object identifiers to each other and is based on a life science ontology” at [0046]-[0047], [0055] and Fig. 1

- “wherein the database comprises case frames representing at least enzyme reactions, binding interactions, modifications of polymers, protein phosphorylation reactions, gene expressions, acetylation, peptide-bon cleavage, glycosylayion, lipidation, fatty-acylation, methylations, metallations, cross-linking, hydroxylation, sulfation, ADP-ribonsylation, translocation, and transcriptional activations” at [0041]-[0043] and [0124].

**As per claim 102**, Kim teaches the system of claim 101, wherein “the case frame representing protein phosphorylation reactions comprises a reactant, a product, and a catalyst” at [0102]-[0112].

**As per claim 103**, Kim teaches the system of claim 101, wherein the case frame representing gene expressions comprises a gene and a gene product” at [0124].

**As per claim 104**, Kim teaches the system of claim 101, wherein “the case frame representing transcriptional activation comprises a gene expression, an activation, and a transcriptional activator” at [0138]-[0145].

**As per claim 105**, Kim teaches the system of claim 101, further comprising “a harmonization and transfer module for interfacing with multiple disparate sources of life science data and receiving new data for inclusion in the database” at [0346] and Fig. 6.



**As per claim 106**, Kim teaches the system of claim 105, further comprising "an interference engine for managing the addition of the new data by instantiating a subset of the plurality of case frames to represent the new data and assuring the instantiated case frames conform to the life science ontology, thereby creating life science assertions in the database" at [0081]-[0087] and [0113]-[0120].

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 40, 96, 99-100 are rejected** under 35 U.S.C. 103(a) as being unpatentable over **Kim** as applied to claims 26-39 above, and in view of Stanley et al. (US 2002/0198858 A1), hereinafter "**Stanley**".

**As per claim 40**, Askenazi teaches the system of claim 26 as discussed above. Kim does not explicitly teach "an access manager configured to restrict access of a user to one or more portions of the electronic database" as claimed. However, Stanley teaches a biological database includes an access manger layer to restrict access of a user to one or more portions of the electronic database at Figs. 15-16. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was

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made to combine Stanley with Kim's teaching in order to enhance the security of the database and protect sensitive data in the database from unauthorized users.

**As per claim 96**, Kim teaches the system of claim 95 discussed above. Kim does not explicitly teach "the received data is received in XML format". However, Stanley teaches a biological database utilizing XML format at [0351]. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Stanley with Kim's teaching to employ XML because XML is a well known data format, which often used as a common format for extracting data from plurality of different data sources.

**As per claim 99**, Kim teaches the system of claim 26 discussed above. Kim does not explicitly teach "a managed account interface for attributing access restrictions to one or more case frames in the database". However, Stanley teaches a biological database includes an access manger layer to restrict access of a user to one or more portions of the electronic database at Figs. 15-16. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Stanley with Kim's teaching in order to enhance the security of the database and protect sensitive data in the database from unauthorized users.

**As per claim 100**, Kim and Stanley teach the system of claim 99 discussed above. Stanley also teaches: "wherein the access restrictions comprise one or more public access rights, subscription-based rights, and proprietary access rights" at Figs. 15-16.

***Response to Arguments***

9. Applicant's arguments filed 2/28/2007 have been fully considered but they are not persuasive. The examiner respectfully traverses applicant's arguments.

Regarding claim 26, Applicant argued that Kim does not teach or suggest "translating data from one format to another" or "selecting from a plurality of case frames for use as templates to represent the addition of new data". On the contrary, Kim teaches a method for collecting different data from different sources and storing data in graph format, which is "a universal representation of heterogeneous molecular biological data. Biological data of different source can be captured in a single unified structure based on intermolecular relationships" (para. [0041]). Kim also teaches at Tables 1-3 on page 6-7 three different templates (i.e. "information table") for adding three different types of data into the database.

Regarding claim 101, applicant argued that neither the database described in Kim, nor Stanley model all of these biological functions". On the contrary, Kim teaches at [0041]-[0043] and [0124] that data in the database are collected from heterogeneous biology data comprising multiple different types of biological data and are not limited to any particular type of biological data for functions. Kim therefore inherently anticipated the claimed limitation.

***Conclusion***

Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the Claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

The prior art made of record, listed on form PTO-892, and not relied upon, if any, is considered pertinent to applicant's disclosure.

If a reference indicated as being mailed on PTO-FORM 892 has not been enclosed in this action, please contact Lisa Craney whose telephone number is **(571) 272-3574** for faster service.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh B. Pham whose telephone number is (571) 272-

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4116. The examiner can normally be reached on Monday through Friday 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571) 272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Khanh B. Pham  
Primary Examiner  
Art Unit 2166



May 7, 2007